Cancer: Exploding Treatment and Diagnostic Pipeline, and Ever-Increasing Costs

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Cancer has always been a devastating and deadly disease. Unlike many other illnesses, it does not discriminate among populations, and it spares neither young nor old. As our population ages, and the menu for diagnostic tools and treatments becomes more expansive and sophisticated, cancer has been evolving as an increasingly dominant disease for research and discussion. Only 30 years ago, our ability to differentiate subclasses, subtypes, and even the stage of cancer was significantly more limited than it is today. Our understanding of the etiology and pathogenesis, as well as the pathobiology of cancer, has dramatically increased. In addition, the investment by the industry and government in cancer research and treatment has expanded dramatically since President Richard Nixon signed the National Cancer Act of 1971, which expanded and provided additional resources to battle this disease.

We have witnessed significant progress in screening, diagnosis, and treatment since the "war" on cancer began. The reality, however, is that despite this progress, many of our new diagnostic modalities and treatments, although costly, provide only incremental benefit. The more dramatic strides in the understanding of cancer biology on a molecular level have been translated into more effective treatments; however, with rare exception, the degree of progress that we have seen in the understanding of cancer biology has lagged in the clinic.

Many types of cancer remain incurable and, in many cases, are diagnosed at a stage when treatment is limited in its ability to prolong life. That being said, cancer rates have decreased in recent years,[1] and fewer people are dying from cancer in the United States compared with several decades ago.[2] Specifically, an age-specific analysis of cancer mortality based on data from the SEER (Surveillance, Epidemiology, and End Results) program indicated a reduction in mortality during the past several decades in the United States.[3] However, a significant contribution to this decreased mortality can be attributed to smoking cessation, a greater focus on cancer screening efforts, and early detection of cancer.[1]

A number of factors have impeded our ability to improve our approaches to cancer screening, diagnosis, and treatment, as well as to finding a "cure" for cancer. Some of these factors include the level of biologic complexity and cellular and molecular heterogeneity of the disease on a global level and on an individual patient level.[4] The complexity of cellular interactions and cell signaling within the tumor microenvironment, and the challenges associated with testing new treatment modalities, have hampered our progress in the battle against cancer. Despite these challenges, more patients are living with cancer and are surviving cancer than in the past.

Improvements in our understanding of the disease have led to dramatic strides in our ability to classify cancer and prognosticate based on molecular diagnostic tools. These tools have contributed to our ability to expand the resources available to treat cancer. The ability to target therapy and personalize treatments has been furthered by advances in our understanding of the molecular basis of the disease.

The diversity of our diagnostic tools and treatments, and the increasing cost of treating cancer care, have contributed to a focus on guidelines and pathways based on evidence-based medicine, with the goal of increasing the prevalence of an evidence-based approach to cancer management. More recently, the concept of "value" has entered the discussion of treating cancer.

This issue of *American Health & Drug Benefits* is representative of the research and efforts in oncology in 3 important areas—cancer epidemiology, the management of treatment-related toxicity, and current and emerging trends in the management of cancer in the United States from the perspective of payers who face increasing challenges as a result of the mounting costs, not only for drugs but also for other treatment modalities.

Quang Nguyen, DO, FACE, and colleagues have made an important contribution in their comprehensive review of the literature, addressing the increasing evidence for the relationship between diabetes and cancer and the potential impact of antidiabetes medications on cancer risk. This is an important article, given the significant increase in the prevalence of patients with diabetes

in the United States, and even more so, the increasing public health hazards associated with obesity, which portend an increasing prevalence of diabetes, further reinforcing the importance of managing both of these diseases in the United States.

Kamakshi V. Rao, PharmD, BCOP, CPP, and colleagues review the literature on chemotherapy-induced nausea and vomiting. In their critical review article, the authors highlight the advances that have occurred in the treatment of these toxicities, which are considered by many oncologists to be one of the most significant advances in the past 2 decades in the management of treatment-related side effects in cancer.

Recent estimates put the costs of cancer care at $100 billion annually, with projections that the cost could rise up in excess of $200 billion by the end of this decade.[5] Much of this cost is borne by government programs, such as Medicare and Medicaid, and much of the remainder being paid for by commercial health insurance companies. Cancer care is an area ripe for cost-saving and quality-improvement interventions, because it is marked by high and rapidly escalating costs, suboptimal adherence to evidence-based guidelines, and wide variations in pricing across regimens that provide similar efficacy. Even in the absence of increasing unit costs for a treatment, the aging of the US population alone will have profound effects on cancer-related spending.

Rhonda Greenapple, MSPH, has provided significant insight into the emerging trends in the management of cancer-related costs and other strategies incorporated or anticipated to be introduced by health plans and pharmacy benefit managers, given the dramatic increase in oncology-related treatment options and costs during the past 5 years and those that are expected in the next 5 years. This important article provides competitive insight into innovative approaches, as well as state-of-the-art cancer cost management in light of reimbursement challenges and the expected impact of the Affordable Care Act.

This issue of the journal also includes a discussion by the Steering Committee of the 2nd Annual Conference of the Association for Value-Based Cancer Care, held on March 28-31, 2012, in Houston, TX, and attended by more than 200 payers, providers, manufacturers, and other stakeholders associated with cancer care delivery and oncology-focused research in the United States.

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This panel of thought leaders addresses the challenges placed on managing patients with cancer by the increasing cost of cancer treatment and discusses and debates the concepts and paths necessary to achieve a value-based approach to cancer care.

We look forward to additional oncology/hematology-focused peer-reviewed articles in future issues of this journal to assist providers, payers, and other stakeholders who are actively involved in the battle against this devastating disease. ■

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